PERTUSSIS ANTITOXIN

Isolation of a strain of Hemophilus pertussis capable of forming a high-titer specific toxin in artificial culture medium is currently reported by Roberts[1] of the Lederle Laboratories, Pearl River, New York.

Since the discovery of H. pertussis, preparation of a soluble whooping cough ectotoxin has been attempted by numerous investigators. Bordet,[2] Toomey,[3] Wood[4] and others succeeded in obtaining toxic filtrates from certain strains of the bacillus, capable of killing mice on intra-abdominal or intravenous injection, and of producing necrotic lesions on endermic injection into rabbits. These filtrates, however, were apparently nonantigenic, since they were not neutralized by an antibacterial immune serum, nor did they stimulate the production of antitoxin in laboratory animals. For this reason they were of little practical interest.

In the hope of improving such yields, the Lederle bacteriologists tested 61 different strains of H. pertussis on numerous types of culture media. The medium finally selected was a buffered beef heart infusion broth containing 2 per cent peptone and 0.1 per cent soluble starch. The broth was adjusted to pH 7.8 before autoclaving. The broth was inoculated with 24-hour seed cultures of the 61 strains, the resultant growths centrifuged and the supernatant fluids sterilized by passage through a Mandel filter.

Most of their 61 pertussis strains yielded practically nontoxic filtrates. Massive doses (0.5 c.c.) injected intravenously failed to kill mice. A few of the filtrates, however, were moderately toxic, killing mice in doses as small as 0.25 c.c. Culture No. 33, in contrast, yielded a highly toxic filtrate giving a 100 per cent mouse fatality on intravenous injection of doses as small as 0.021 c.c. death taking place within 24 hours. Injected endermically in 0.1 c.c. doses in rabbits, this filtrate caused local necrosis, the lesion reaching its maximum size in from 2 to 3 days, and subsequently sloughing to form a shallow ulcer.

The lethal and necrotic factors in this filtrate are thermolabile at all temperatures from 2° to 60°. At ordinary refrigerator temperatures (3 to 5° C.), the toxicity decreases about one-half within a month, and is completely lost by the end of 12 months. At ordinary room temperatures the toxicity is lost within 30 days, at 40° C. within 24 hours, and at 50° C. within 10 minutes. The lethal and dermal necrotic titers are lost simultaneously. Deterioration of the toxin can be prevented by the addition of 50 per cent glycerin, or 50 per cent sucrose, or by evaporating it to dryness. Dried filtrates suffer no demonstrable loss of toxicity for at least 18 months.

Toxin No. 33 is first demonstrable in broth cultures in about 2 days, increasing to a maximum titer in from 6 to 10 days. The toxin is highly antigenic. Rabbits are readily immunized by repeated subcutaneous injections of the filtrate, after which their skin is refractory to both the toxin and to live cultures of all strains of H. pertussis thus far tested. Rabbits thus immunized yield an antitoxic serum readily titrated by *in vitro* methods. Nontoxic toxoid prepared by the addition of formaldehyde, also stimulates the production of a specific antitoxin in rabbits.

While Roberts does not predict probable clinical application of the new toxoid and antitoxin, it is evident that the discoveries will stimulate new hope of improved methods in specific therapy and prophylaxis. Th situation is analogous to that in diphtheria and tetanus toxins a generation ago. The discovery thus represents one of the most encouraging contributions to basic immunological science of recent decades.

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Regimentation of Medicine*

Do you want the United States Government to take over and operate the practice of medicine? Do you want another bureaucrat, called a "Surgeon-General," to tell you whether or not you can be attended by the physician of your choice? Do you want to pay 6 per cent more of your wages into another governmental scheme for taking over another portion of your private life and create another gigantic bureau to regulate things here in this democracy of ours?

That's what Senators Robert F. Wagner (D., N. Y.) and James E. Murray (D., Mont.) propose in a bill introduced in the Senate to broaden the Social Security Act, and which will be called up for action when Congress reconvenes in September.

Under the guise of adding domestic and farm workers, sailors, employees of religious and charitable institutions, public servants and other smaller groups to the eligibles for old-age pension and unemployment insurance benefits, the bill would set up a detailed plan for bringing State Medicine to the United States, run from Washington by the United States Surgeon-General.

To finance the scheme, Social Security taxes on both employers and employees would be steeply increased. They would go to 6 per cent of wages up to $3,000 a year from each of these parties, as against the present 1 per cent from employees and 4 per cent from employers. Add that to your 20 per cent withholding tax and where are you?

One-fourth of the revenue raised would go to finance the Federal Government system—an estimated $3,000,000,000 a year. With this money the Surgeon-General would be required to arrange for general medical, special medical, laboratory, and hospital services for every one of the estimated 110,000,000 Americans covered by a broadened Social Security Act. He would be, as the New York *News* points out, the commissar of the United States medical profession, because of the powers this proposed law would give him.

These powers include: To enlist physicians for the services above described and hospitals likewise; to fix fees of

* For editorial comment, see page 109-110.